CHECKLIST #0475 FOR THE APPROVAL OF:
DURABILITY OF WOOD-BASE STRUCTURAL COMPOSITE LUMBER AND PANELS

- ❑ Basic Requirements Checklist.
- ❑ One set of the manufacturer's 'approval document'.
- ❑ One set of manufacturer's design drawings marked and verified by the testing laboratory.
- ☐ Proposed design values for lumber shall be determined in accordance with ASTM D5456.
- ☐ A manufacturing standard conforming to ASTM D5456 shall be developed and submitted.
- ☐ Manufacturer shall maintain an ongoing quality assurance program as outlined in their manufacturing standard. This quality assurance program shall include random independent inspections by third party.

The following current laboratory tests and test reports in compliance with protocol PA 301.

☐ **MOISTURE DURABILITY TESTS**

PURPOSE
The purpose of these tests are to verify the durability and structural integrity of wood-base structural composite lumber and panels designed for dry use applications when they are exposed to cyclic moisture conditions. These conditions typically might occur during construction, or when the exterior cladding of the structure is breached during a major storm.

PROCEDURES
A single representative product grade and species for each type of structural composite product shall be tested for durability according to the provisions of this document. The following procedures shall be used to conduct these durability tests:

1. Sample Size: For each test conducted, a total of 20 specimens shall be tested. These 20 specimens shall consist of 10 sets of side matched samples. Ten of these specimens shall be used as control specimens and 10 shall be moisture cycled.
2. Conditioning: The mean moisture content for the 10 control specimens for each test shall not exceed 12%. The 10 cycled specimens for each test shall be conditioned as follows:
    - Six hours of continuous water spray applied at a minimum rate of 1" per hour. The specimens shall be placed such that the largest dimension (width or depth) is exposed to the spray. A minimum spacing of 1" shall be maintained between the specimens. The specimens shall be turned half way through this cycle to ensure saturation of all surfaces.
    - Air-dry the specimens for 7 days in conditions of 70^{o}F or greater and 45% relative humidity or less.
    - Repeat six-hour water spray cycle as prescribed above.

- Repeat 7 day drying cycle as prescribed above.
- Repeat six-hour water spray cycle as prescribed above. Testing shall be conducted within four hours of the completion of this cycle.

3. Structural Tests: 10 control and 10 conditioned specimens shall be tested in flexure in accordance with ASTM D4761 to determine the Modulus of Rupture, and Modulus of Elasticity. Initial, dry dimensions shall be used to calculate Modulus of Rupture and Modulus of Elasticity. The size of the specimens for the flexure test shall be within the following ranges:

   Width: 1.25" to 3.5"
   Depth: 3.5" to 7.25"
   Span: 17" to 21" in depth

4. Connector Tests: 10 control and 10 conditioned specimens shall be tested in accordance with ASTM D1761 to determine the lateral and withdrawal capacities for the following connectors:
   - 10d common nails installed into the edge of the sample – loaded parallel to the length of the piece.
   - 10d common nails installed into the edge of the sample – loaded perpendicular to the length of the piece.
   - 10d common nails installed into the edge of the sample – loaded in withdrawal.

The thickness of the main member used in the lateral connector test shall be no less than 1-1/2" and no greater than 1-3/4". The cleat used in the lateral connector test shall consist of a metal strap of sufficient strength and thickness so as to cause the connection to fail in the main member. The connectors shall be installed as prescribed in ASTM D1761 prior moisture cycling. Lateral Nail capacity shall be reported as the load at 0.015" slip. Nail withdrawal capacity shall be reported as ultimate load.

ACCEPTANCE CRITERIA

As an indication that the test specimens are representative of the material population, a comparison shall be made of the mean of the 10 bending control specimens and the published design values (adjusted for depth) for the material grade being used. The ratio of the control means to the published design value shall meet or exceed the following values:

- Modulus of Rupture 2.5
- Modulus of Elasticity 0.9

Durability acceptance will be based upon a comparison of the mean of the 10 cycled specimens to the mean of the 10 control specimens. The ratio of the cycled to control means shall meet or exceed the following values:

- Modulus of Rupture 0.75
- Modulus of Elasticity 0.75
- Lateral fastener tests (Average load @ 0.015" slip) 0.75
- Withdrawal fastener tests (Average ultimate load) 0.25

Notes:

1. This document is to be used to evaluate the durability of wood-base structural composite lumber and panels under cyclic moisture conditions.
2. This document applies to structural composite lumber as defined in ASTM D5456. Examples of structural composite lumber include Laminated Veneer Lumber (LVL), Parallel Strand Lumber (PSL), and Laminated Strand Lumber (LSL).
3. Engineered panel products such as plywood, oriented strand board, etc., are also within the scope of this document.